



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/384,504	08/27/1999	JOHN W. MARSHALL	112025-0166	7925

7590

12/03/2003

A. Sidney Johnston
Cesari and McKenna, LLP
88 Black Falcon Avenue
Boston, MA 02210

EXAMINER

BRODA, SAMUEL

ART UNIT	PAPER NUMBER
----------	--------------

2123

DATE MAILED: 12/03/2003

17

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/384,504

Applicant(s)

MARSHALL ET AL.

Examiner

Samuel Broda

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-7,9-11 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7,9-11 and 13-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 16.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 2123

DETAILED ACTION

1. This communication is in response to Applicants': (a) Amendment, and (b) Information Disclosure Statement, both received on 5 September 2003. Claims 4, 8, and 12 were canceled; claims 1, 5, and 9 were amended, claims 1-3, 5-7, 9-11, and 13-17 are pending.

Specification

2. The disclosure is objected to because of the following informalities:
- (1) in the text at pages 14-15 describing Fig. 5, the Specification appears to use identifier "92" both for HA functions and for physically accurate descriptions. Using the numbering from Fig. 5, it appears that the references to "actual physical characteristics" or "physically-accurate descriptions" should use identifier "93"; and
 - (2) the references to related co-pending Applications are now obsolete and require updating to reflect current application serial numbers and/or patent numbers, including removal of all attorney docket number information.

Claim Rejections - 35 U.S.C. § 112, First Paragraph

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 2123

3.1 Claims 1-3, 5-7, 9-11, and 13-17 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

3.2 Regarding claims 1-3, 5-7, 9-11, and 13-17, these claims are rejected under 35 U.S.C. 112, first paragraph, because the Specification does not reasonably provide enablement for simulating the timing operation of a system using the combination of a physically-accurate description of a first portion of a system and an approximate mathematical model of a second portion of a system. The Specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

A review of the Specification and drawings indicates that pages 13-17 of the Specification describe the dividing of a system into a portion modeled by physical characteristics and a portion modeled using hierarchical analysis.

While the Specification at page 16 lines 5-11 appears to discuss one empirically-determined rule for selecting a portion of a circuit for simulation using physical characteristics, no flowcharts or text description in the Specification appears to describe:

- (1) how to interconnect the computer components and program them to pass the data necessary to determine the timing based on physical characteristics or hierarchical analysis; or

Art Unit: 2123

- (2) how to combine the physically accurate description of the timing of the first system portion with the approximate mathematical model of the timing of a remaining system portion.

For example, according to Fig. 1, the physical characteristic modeling engine is connected to both the hierarchical analysis modeling engine and the composite engine, but the Specification includes no description of the electrical connections or types of data passed. Similarly in Fig. 5, it appears that the physically accurate descriptions of circuit blocks are supplied as input to the hierarchical analysis timing function calculations for other circuit blocks, but the Specification includes no description of the electrical connections or types of data passed.

Overall, the Specification appears to describe the general features of Applicants' claimed invention as applied to the schematic circuit models appearing in the drawings.

In this situation, the MPEP Section 2106.02 appears applicable. This section states in-part at page 2100-27 column 1 paragraph 2 (Feb. 2003):

While no specific universally applicable rule exists for recognizing an insufficiently disclosed application involving computer programs, an examining guideline to generally follow is to challenge the sufficiency of such disclosures which fail to include either the computer program itself or a reasonably detailed flowchart which delineates the sequence of operations the program must perform.

Taken as a whole, only with undue experimentation could one reasonably skilled in the art make and/or use the invention described in the specification.

Art Unit: 2123

Applicants are encouraged to review MPEP Section 2106.02 regarding approaches to traversing this rejection.

Applicants' Arguments

4. Applicants make the following arguments:

4.1 Regarding the rejections under Section 112, first paragraph, Applicants argue:

(1) the Specification is enabling for hierarchical analysis approximate mathematical functions when read in light of prior art such as Kukimoto et al (Amendment, pages 8-9); and

(2) “the specification does describe how to interconnect the computer components used in the present invention” and block diagrams are sufficient, because of the well-known nature of hierarchical analysis (Amendment, pages 9-10).

4.2 Regarding the rejections under Section 112, second paragraph, Applicants argue that one skilled in the art would be familiar with the meaning and definitions of “hierarchical analysis mathematical functions” and “approximate mathematical model,” as shown by Kukimoto et al.

4.3 Regarding the rejections under Section 102 and 103, Applicants argue that Shepard et al performs hierarchical analysis on the entire system, whereas “[t]he present invention employs both a physically-accurate description of a portion of a system and

Art Unit: 2123

hierarchical analysis of another portion of the system to achieve greater accuracy than what hierarchical analysis could achieve alone.” (Amendment, page 13).

Examiner's Reply

5. Applicants' arguments, described above, regarding the previous rejections under Section 112, second paragraph, and Sections 102 and 103, have been fully considered and are persuasive. However, the Examiner respectfully disagrees with the arguments made regarding the rejections under Section 112, first paragraph, for the following reasons:

5.1 Regarding the rejections made under Section 112, the Specification and drawings do not appear to describe how to make the claimed invention. Applicants' argument that the Specification at page 8 line 21 to page 9 line 16 teaches how to interconnect the computer components appears incorrect. The quoted text from the Specification describes “module 65.”

However, module 65 does not appear to be part of the system that performs the simulation; instead, module 65 appears to be part of the system to be simulated. See Figs. 1 and 3 and the Specification at page 8 lines 1-20, describing the “proposed design 100” that includes “module 65.”

As described above, the Specification does not appear to describe how to make or program the computer system to combine the separate “physically-accurate description” and “approximate model” into a timing simulation. The fact that hierarchical analysis is well-known, as demonstrated by Kukimoto et al, does not indicate that one skilled in the art would be able to

Art Unit: 2123

use Applicants' Specification to make a simulation that split a system into portions with one portion simulating timing based on a physically-accurate description and the other portion simulating timing using hierarchical analysis.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. Reference to Blaqui re et al, "Timing Analysis Speed-up Using a Hierarchical and a Multimode Approach," IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, Vol. 15 No. 2, pp. 244-255 (February 1996), is cited as teaching the selective partitioning at different abstraction levels using rough delay models at high hierarchical levels and more detailed models at lower levels.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Art Unit: 2123

8. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Samuel Broda, whose telephone number is (703) 305-1026. The Examiner can normally be reached on Mondays through Fridays from 8:00 AM – 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at (703) 305-9704. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (703) 305-3900.



SAMUEL BRODA, ESQ.
PRIMARY EXAMINER